## (19) World Intellectual Property Organization International Bureau



## 

(43) International Publication Date 8 April 2004 (08.04.2004)

PCT

## (10) International Publication Number WO 2004/029250 A1

(51) International Patent Classification<sup>7</sup>: 9/04, C12P 19/42

C12N 15/53,

(74) Agents: KELLER, Günter et al.; Lederer & Keller, Prinzregentenstrasse 16, 80538 München (DE).

(21) International Application Number:

PCT/EP2003/010684

(22) International Filing Date:

25 September 2003 (25.09.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

02021641.2

27 September 2002 (27.09.2002) EI

(71) Applicant (for all designated States except US): DSM IP ASSETS B.V. [NL/NL]; Het Overloon 1, NL-6411 TE Heerlen (NL).

(72) Inventors; and

(75) Inventors/Applicants (for US only): HOSHINO, Tatsuo [JP/JP]; 2-18-14 Fueta, Kamakura-shi, Kanagawa-ken, Kanagawa 248-0027 (JP). ICHIKAWA, Kelko [JP/JP]; Marin-terasu-nibankan 201, 3-8-14 Tsujido, Fujiswa-shi, Kanagawa-ken, Kanagawa 251-0047 (JP). TAZOE, Masaaki [JP/JP]; 5-14-22 Yokodai, Isogo-ku, Yokohama-shi, Kanagawa-ken, Kanagawa 235-0045 (JP).

(81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,

MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

## Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: DNA ENCODING FLAVIN-ADENINE-DINUCLEOTIDE-DEPENDENT-D-ERYTHRONATE-4-PHOSPHATE-DE-HYDROGENASE, PDXR, AND MICROBIAL PRODUCTION OF VITAMIN  $B_6$ 

(57) Abstract: The present invention relates to a DNA encoding a novel flavin adenine dinucleotide (FAD)-dependent D-erythronate 4-phosphate (EN4P) dehydrogenase originated from Sinorhizobium meliloti, which is involved in vitamin  $B_6$  biosynthesis, and a recombinant microorganism transformed with a vector having the DNA. It also relates to a process for production of vitamin  $B_6$  by using the recombinant microorganism. "Vitamin  $B_6$ " as used in this invention includes pyridoxol (PN), pyridoxal and pyridoxamine. Vitamin  $B_6$  is a vitamin indispensable to human beings or other animals, and is used as a raw material of medicines or as feed additives.

